

U.S. Patent Application Serial No. 09/828,313  
Response to Office Action  
July 18, 2003  
Page 2 of 11

4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Cancelled)
16. (Cancelled)
17. (Cancelled)
18. (Cancelled)
19. (Cancelled)
20. (Cancelled)
21. (Cancelled)
22. (Cancelled)
23. (Cancelled)
24. (Cancelled)
25. (Cancelled)
26. (Cancelled)
27. (Cancelled)
28. (Cancelled)
29. (Cancelled)
30. (Cancelled)
31. (Cancelled)
32. (Cancelled)

33. (Currently amended) ~~The transgenic plant cell of Claim 32,~~ A transgenic plant cell transformed with a nucleic acid encoding a polypeptide, wherein the ~~PKSRP is a MPK 3 protein~~ as polypeptide is defined in SEQ ID NO:35.

34. (Currently amended) The transgenic plant cell of Claim 32 33, wherein the ~~PKSRP~~ encoding nucleic acid comprises a the polynucleotide as defined in SEQ ID NO:22.

35. (Currently amended) A transgenic plant cell transformed ~~by a Protein Kinase Stress-Related Protein (PKSRP) encoding~~ with a nucleic acid encoding a polypeptide, wherein expression of the polypeptide in the plant cell results in the plant cell's increased tolerance to an environmental stress selected from one or more of the group consisting of drought and temperature less than or equal to 0°C, as compared to an untransformed wild type variety of the plant cell; wherein the ~~PKSRP-encoding~~ nucleic acid hybridizes under stringent conditions to at least one sequence selected from the group consisting of the sequence of SEQ ID NO:22 and the full-length complement of the sequence of SEQ ID NO:22; and wherein the stringent conditions comprise hybridization in a 6X sodium chloride/sodium citrate (SSC) solution at 65°C and at least one wash in a 0.2X sodium chloride/sodium citrate (SSC), 0.1% SDS solution at 50°C.

36. (Cancelled)

37. (Currently amended) A transgenic plant cell transformed ~~by a PKSRP encoding with a~~ nucleic acid encoding a polypeptide, wherein the ~~PKSRP-encoding nucleic acid comprises a polynucleotide encoding a polypeptide~~ having at least 80% 90% sequence identity with a polypeptide as defined in SEQ ID NO:35, wherein expression of the polypeptide in the plant cell results in the plant cell's increased tolerance to an environmental stress selected from one or more of the group consisting of drought and temperature less than or equal to 0°C, as compared to an untransformed wild type variety of the plant cell.

38. (Currently amended) The transgenic plant cell of any of Claims 32, 33, 34, 35, or 37, wherein the plant is a monocot.

39. (Currently amended) The transgenic plant cell of any of Claims 32, 33, 34, 35, or 37, wherein the plant is a dicot.

40. (Currently amended) The transgenic plant cell of any of Claims 32, 33, 34, 35, or 37, wherein the plant is selected from the group consisting of maize, wheat, rye, oat, triticale, rice, barley, soybean, peanut, cotton, rapeseed, canola, manihot, pepper, sunflower, tagetes, solanaceous plants, potato, tobacco, eggplant, tomato, Vicia species, pea, alfalfa, coffee, cacao, tea, Salix species, oil palm, coconut, and perennial grass, ~~and a forage crop~~.

41. (Currently amended) A transgenic plant comprising a the plant cell according to any of Claims 32, 33, 34, 35, or 37.

42. (Currently amended) A seed produced by a transgenic plant comprising a the plant cell according to any of Claims 32, 33, 34, 35, or 37, wherein the seed comprises the PKSRP nucleic acid encoding the polypeptide, wherein the seed is true breeding for an increased tolerance to an environmental stress as compared to a an untransformed wild type variety of the plant cell, and wherein the environmental stress is selected from one or more of the group consisting of drought and ~~low~~ temperature less than or equal to 0°C.

43. (Currently amended) An isolated ~~Protein Kinase Stress Related Protein (PKSRP)-encoding~~ nucleic acid encoding a polypeptide, wherein the ~~PKSRP-encoding~~ nucleic acid comprises a polynucleotide that encodes a the polypeptide as defined in SEQ ID NO:35.

44. (Currently amended) The isolated ~~PKSRP-encoding~~ nucleic acid of Claim 43, wherein the ~~PKSRP-encoding~~ nucleic acid comprises a the polynucleotide as defined in SEQ ID NO:22.

45. (Currently amended) An isolated ~~PKSRP-encoding~~ nucleic acid, encoding a polypeptide, wherein expression of the polypeptide in the plant cell results in the plant cell's increased tolerance to an environmental stress selected from one or more of the group consisting of drought and temperature less than or equal to 0°C, as compared to an untransformed wild type variety of the plant cell; wherein the ~~PKSRP-encoding~~ nucleic acid hybridizes under stringent conditions to at least one sequence selected from the group consisting of the sequence of SEQ ID NO:22 and the

full-length complement of the sequence of SEQ ID NO:22;<sub>i</sub> and wherein the stringent conditions comprise hybridization in a 6X sodium chloride/sodium citrate (SSC) solution at 65°C and at least one wash in a 0.2X sodium chloride/sodium citrate (SSC), 0.1% SDS solution at 50°C.

46. (Cancelled)

47. (Currently amended) An isolated ~~PKSRP coding~~ nucleic acid, ~~wherein the PKSRP coding nucleic acid comprises a polynucleotide~~ encoding a polypeptide having at least 80% 90% sequence identity with a polypeptide as defined in SEQ ID NO:35, wherein expression of the polypeptide in the plant cell results in the plant cell's increased tolerance to an environmental stress selected from one or more of the group consisting of drought and temperature less than or equal to 0°C, as compared to an untransformed wild type variety of the plant cell.

48. (Currently amended) An isolated recombinant expression vector comprising ~~an PKSRP coding~~ the nucleic acid of any one of Claims 43, 44, 45, or 47, wherein expression of the ~~PKSRP~~ polypeptide in a plant cell results in the plant cell's increased tolerance to an environmental stress as compared to a an untransformed wild type variety of the plant cell, and wherein the environmental stress is selected from one or more of the group consisting of drought and ~~low~~ temperature less than or equal to 0°C.

49. (Cancelled)

50. (Currently amended) ~~The method of Claim 49,~~ A method of producing a transgenic plant comprising a nucleic acid encoding a polypeptide, comprising,

- a. transforming a plant cell with the expression vector of Claim 48; and
  - b. generating from the plant cell a transgenic plant that expresses the polypeptide;
- wherein the ~~PKSRP is a MPK-3 polypeptide as~~ polypeptide is defined in SEQ ID NO:35.

51. (Currently amended) The method of Claim 49 ~~50~~, wherein the ~~PKSRP coding nucleic acid~~ expression vector comprises a the polynucleotide as defined in SEQ ID NO:22.

52. (Currently amended) A method of producing a transgenic plant ~~containing a Protein Kinase Stress Related Protein (PKSRP) coding comprising a nucleic acid encoding a polypeptide~~, wherein expression of the PKSRP polypeptide in the plant results in the plant's increased tolerance to an environmental stress, as compared to a an untransformed wild type variety of the plant, comprising,

- a. transforming a plant cell with ~~an~~ the expression vector ~~comprising the nucleic acid of Claim 48; and~~
- b. generating from the plant cell a transgenic plant ~~with an increased tolerance to an environmental stress as compared to a wild type variety of the plant, that expresses the polypeptide;~~

wherein the ~~PKSRP coding~~ nucleic acid hybridizes under stringent conditions to at least one sequence selected from the group consisting of the sequence of SEQ ID NO:22 and the full-length complement of the sequence of SEQ ID NO:22; wherein the stringent conditions comprise hybridization in a 6X sodium chloride/sodium citrate (SSC) at 65°C and at least one wash in a 0.2X sodium chloride/sodium citrate (SSC), 0.1% SDS solution at 50°C; and wherein the environmental stress is selected from one or more of the group consisting of drought and ~~low~~ temperature less than or equal to 0°C.

53. (Cancelled)

54. (Currently amended) A method of producing a transgenic plant ~~containing a Protein Kinase Stress Related Protein (PKSRP) coding comprising a nucleic acid encoding a polypeptide~~, wherein expression of the PKSRP polypeptide in the plant results in the plant's increased tolerance to an environmental stress, as compared to a an untransformed wild type variety of the plant, comprising,

- a. transforming a plant cell with ~~an~~ the expression vector ~~comprising the nucleic acid of Claim 48; and~~
- b. generating from the plant cell a transgenic plant ~~with an increased tolerance to an environmental stress as compared to a wild type variety of the plant, that expresses the polypeptide;~~

wherein the ~~PKSRP coding nucleic acid comprises a polynucleotide encoding a polypeptide having~~ has at least 80% 90% sequence identity with a the polypeptide as defined in SEQ ID

U.S. Patent Application Serial No. 09/828,313  
Response to Office Action  
July 18, 2003  
Page 7 of 11

NO:35, and wherein the environmental stress is selected from one or more of the group consisting of drought and ~~low~~ temperature less than or equal to 0°C.